

Implementing Disaster Medicine Training in a Medical School Curriculum

From demonstration project to curricular integration



UVAMRC
University of Virginia
School of Medicine
Charlottesville, VA

Participants

- Matt Alexander, BS Chief of Operations
- Joseph Baltz, BSE
 Director of Administration
- Josh Durham, BS (MD in 3 weeks)
 Assistant Chief of Operations
- Edward Kantor, MD Faculty Director/Chief



UVAMRC-Background

- One of handful of MRCs based in University
 - Sponsored by UVA School of Medicine
- Only MRC with a student leadership model
- Partnered with other divisions and agencies
 - School of Nursing and Counseling Education
 - Departments of Emergency Medicine, Toxicology, Psychiatry, Chaplaincy, Internal Medicine
 - Local Health District, Red Cross Chapter, Regional EOC, University Hospital, Community Mental Health Center



Presentation Goals

- Discuss medical core competencies and benefits of academic medicine/public health partnerships
- Describe the three year experience with core disaster skills training in medical education
- Examine program evaluation and plans for improvement, including further integration into medical school curriculum

Core Competencies in Medical Education



- -Professionalism
- -Systems-Based Practice
- -Practice-Based Learning and Improvement
- -Patient Care
- -Medical Knowledge
- -Interpersonal and Communication Skills

To achieve competency, students must acquire a minimum level of skill, knowledge, and attitude.



Partnerships: Academic Medicine and Public Health

- Climate is right for working together
 - Disaster Response infrastructure is transforming at the same time Medical Education is changing.
- Government encouraging cooperation
 - Public Health and Academia- HHS grants through CDC for partnerships (AAMC, ATPM and ASPH).
- This is encouraging, but not enough...
 - Little incentive for cooperation silo-like funding streams
 - Perceived under funding leads to agency self-protection
 - Accreditation bodies use different standards
 - Nomenclature is different
 - Common goals are often thwarted by politics and funding



Concept of Interdisciplinary Competencies

- The conventional response system is expected to need many extra health care personnel- aka SURGE.
- Systems-based practice is a requirement in all medical training areas.
- Planning, working and training together in advance will likely improve outcomes in events.
- Teaching the same material and using the same standards in each phase of medical training AND in the response community, increases efficiency, lowers barriers to participation and reduces cost.



Goals of Curricular Integration



- Teach disaster response skills to students
- Introduce students to the roles and players involved in disaster response, including roles for medical students
- Generate interest in public health and disaster planning & response as possible careers
- Train next generation of physicians in basic disaster medicine from a systems-based perspective
- Increase recruitment of students in the UVAMRC

- Organized by UVA Health System Emergency Planning Director
- Taught in 2002-2003
- Lecture format only
- One day format
- Varying topics in emergency prep



- Designed by Dr. Mark Kirk
- Single day of training
- Overview lecture of disaster response and introductory case
- Wrap up session with Q&A panel
- Held very late in 3rd year of training
- Optional (only 60 med students attended)
- Small group modules initiated



Modules for Disaster Medicine

- Overview: Anatomy of a Disaster
- Risk Communications and Mental Wellness
- Personal Protective Equipment (PPE)
- START Triage
- Extrication and Patient Transportation
- Recognition of Toxic Syndromes
- Mass Decontamination
- Mass Immunization and Infectious Disease



Risk Communication Skills

Objective:

Provide students with basic concepts and practical experience with message management and crisis communication in disasters and public health emergencies



Risk Communication Skills

- Goals for basic student competence:
 - Understand individual role in using risk communication skills in a public health emergency
 - Know the steps in preparing and delivering a message and consequences of your message



Personal Protective Equipment (PPE)



Objective:

Hands-on experience to gain entry-level confidence in operating in PPE ensembles in various settings





Personal Protective Equipment (PPE)

- Goals for student competence:
 - Develop confidence in their level of protection and know what protection they may need
 - Understand the makeup of their PPE and emergency procedures for failure
 - Understand proper donning and doffing of PPE/Respiratory Protection





START Triage





 Objective: Learn principles of patient sorting and individual skills (for their level of training) that each student can apply to a community disaster response



START Triage

- Goals for student competence:
 - Understand the concept and basic structure of the START triage system (meaning of colors, etc.)
 - Understand Jump START triage for pediatric patients
 - Demonstrate proficiency in skills that may be useful in a disaster or public health emergency



Extrication and Patient Transportation

• Objective:

Learn safe and effective ways to remove patients from dangerous environments and transport to safety







Extrication and Patient Transportation

- Goals for student competence:
 - Understand individual role in assisting with removal and transport of injured patients
 - Know proper method of applying a backboard, C-collar and splints
 - Learn how to safely lift and carry a stretcher





Recognizing Toxic Syndromes

TOXIC SYNDROME	COMMON SIGNS AND SYMPTOMS	EXAMPLES
Irritant gas syndrome	Eye, nose and throat irritation, cough, wheezes, shortness of breath, chest pain Caution: may have a delayed presentation	Ammonia, chlorine Delayed presentation seen with phosgene and nitrogen dioxide
Chemical burns	Painful burning skin, mucous membrane irritation, systemic effects	Hydrochloric acid, hydrofluoric acid, hydrocarbon solvents such as degreasors and defatters
Pesticide poisoning (Cholinergic storm)	Pinpoint pupils, eye pain, shortness of breath, wheezes, rales, sweating skin, drooling, tearing, vomiting, diarrhea, fasciculations, coma, seizures	Organophosphate and carbamate insecticides, nerve agents
Acute solvent exposure	Headache, lightheadedness, nausea, Mucous membrane irritation, confusion	Paint thinners, degreasors and lubricants Toluene, methylene chloride, trichloroethylene,
"knock-down" or metabolic poisoning	Rapid loss of consciousness, seizures, cardiac arrest	Cyanide, hydrogen sulfide, phosphine
Behavioral response to the fear of chemical exposure "The fear factor"	Lightheadedness, shortness of breath, chest pain, faint, nausea, sweating skin, palpitations, tremor	Often "fight or flight" stress response from fear. CAUTION: low level exposure to toxins can resemble this response

• Objective:

To recognize chemical toxic syndromes and take appropriate actions



Recognizing Toxic Syndromes

- Goals for student competence:
 - Know the common chemical toxic syndromes, characteristics and examples
 - Know immediate actions to take after recognizing each syndrome



Mass Decontamination

 Objective: To introduce students to the theory and practice of large scale decontamination

Brief presentation on DECON protocols, and exercises in decontamination of a mannequin given different scenarios





Mass Decontamination





- Goals for student competence:
 - Understand individual role and process of decontamination
 - Understand theory and strategies for mass decontamination



Mass Immunization and Infectious Disease Issues





 Objective: Participants will learn how to distribute medications and administer injections to large numbers of people



Mass Immunization and Infectious Disease Issues

- Goals for student competence:
 - Demonstrate ability to administer immunizations (including Small Pox)
 - Demonstrate methods of self protection using airborne, contact, droplet and standard precautions
 - Understand the general principles of mass prophylaxis and mass immunization



Feedback from Medical Students

Qualitative Feedback

- "Excellent...
- "... this is information we are unlikely to get anywhere else as students."
- "Great hands on experience."
- "...Make it possible to see all [sessions] instead of 3 of the 6."

Quantitative Post-experience Survey Data
Overall value to you? (1=Poor - 5=Excellent)
-Overall Rating 4.28 (range 3.68-4.73)



Feedback from Medical Students

- Session Rank Order (highest to lowest)
 - Extrication and Patient Transport
 - START Triage
 - Case Study and Testimonials
 - Risk Communication Skills
 - Mass Immunization and ID Issues
 - Recognizing Toxic Syndromes
 - Personal Protective Equipment
 - Overview: Anatomy of a Disaster
 - Mass Decontamination



- Sessions refined with more focus placed on Extrication, Triage, and Mass Immunization
- UVAMRC Leadership assisted in running modules
- Students were only able to attend 4 of 7 small group modules
- Q&A session panel included physicians involved in real disaster response (OK City Bombing)
- Again was optional, but 100 students were in attendance



- Small group modules arranged so that students attended 5 of 7
- All students attended Triage, Extrication, and Mass Immunization Modules
- UVAMRC membership assisted in modules
- Q&A session panel included physicians involved in real disaster response (Katrina)
- Held earlier in 3rd year of training
- Now mandatory (150 students in attendance)



- Personal Protective Equipment Module changed to Personal Protection Actions
- Focus included original PPE content with addition of methods of self protection using airborne, contact, droplet, and standard precautions
- Mass Immunization Module trimmed to basics for better use of time



Expansion of Curricular Integration

- Initiate disaster training earlier 1st and 2nd year
- Design level-specific training sessions for each medical student year (1-4) with expanded focus as students progress
- Measure acquisition of competency with appropriate assessment and evaluation
- Work to adapt competencies and curricula to nursing, GME and CME needs
- Align training with evolving national standards and provide certificate of completion

Benefits of Curricular Integration for UVAMRC

- Provides medical students with practical skills to help in disaster response
- Increases pool of trained volunteers for community response (now and after graduation)
- Provides training opportunities that translate to the rest of the MRC
- Pre-training allows for easier integration and less need for 'just-in-time training'

Clinical Connections as UVAMRC Member Training

Clinical Connections modules provided to UVAMRC membership March 2006

- Introduction to Disaster
- Risk Communication
- 4 small group modules
 - Recognizing Toxic Syndromes
 - Extrication/Transport
 - Personal Protective Equipment (PPE)
 - START Triage
- 20 members participated
- Very Positive feedback



Acknowledgement

Mark Kirk, MD

Deputy Chief/Faculty Advisor, UVAMRC Dept. of Emergency Medicine/Toxicology UVA School of Medicine, Charlottesville, VA

Dr. Kirk is the course director for the 3rd year clinical connections program in disaster skills.





Discussion



What minimum knowledge, skills and attitudes do YOU feel are necessary for medical and health professions students?

What successes have YOU had working with your local medical school/health system?

Do you feel this is an effective way to train volunteers and professionals?

Other Questions, Comments, Ideas?

More info:



